



COMPAS - COMPLIANCE-DRIVEN MODELS, LANGUAGES, AND ARCHITECTURES FOR SERVICES

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ABSTRACT. Compliance in service-oriented architectures (SOA) means in general complying with laws and regulations that apply to a distributed software system. Unfortunately, the divergence and frequent changes of different compliance sources make it hard to systematically and quickly accommodate new compliance requirements due to the lack of an adequate methodology for system and compliance engineering. Moreover, the difference of perception and expertise of multiple stakeholders involving in system and compliance engineering further complicates the analyzing, interpreting, implementing, and assessing of compliance. For these reasons, in many cases, business compliance today is reached on a per-case basis. That is, companies do not have a generic strategy for business compliance, but instead they use ad hoc, hand-crafted solutions for specific rules to which they must comply. This leads in the long run to problems regarding complexity, understandability, maintainability, changeability, and reusability of compliance concerns in a SOA.

The aforementioned challenges have inspired the idea of fostering a comprehensive SOA business compliance software framework that enables a business to express these compliance concerns using the same software framework and SOA enhancement, e.g., set of languages and models, technological mapping onto the service-oriented architecture, and technologies that realize such a compliance software framework. These are key contributions of the COMPAS project.

In particular, COMPAS facilitates view-based, model-driven techniques, domain-specific languages, and service-oriented infrastructure software to enable organizations developing business compliance solutions easier and faster. This is achieved using the model-driven software development approach to enable organizations developing custom business compliance solutions faster, cheaper, and with less required programming skills. Domain-specific languages will be used to enable non-programmers to work with and understand the compliance models in their domain. We have devised a "design-for-compliance" technology framework which will be used to ensure compliant composition of business processes and services and that will allow specification, validation, and enforcement of comprehensive compliance policies related to these processes and services. That is, the entire compliance life cycle will be addressed. Furthermore, specification languages and models for expressing typical compliance concerns have been developed. A formally grounded and implemented behavioral model for services and service composition will be provided enabling the formal validation of compliance of composed services to the specifications. We have also developed monitoring and management tools for tracking and validating the compliance concerns that can only be verified at runtime, thus enabling governance of compliance concerns.